CHAPTER 3
OPERATOR/CREW MAINTENANCE INSTRUCTIONS

Section I. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

3-1. GENERAL.

To ensure that the Precision Gunnery System (PGS) is ready for operation at all times, it must be inspected on a regular basis so that defects may be found before they result in serious damage, equipment failure, or injury to personnel. Table 3-1 contains systematic instructions on inspections, adjustments, and corrections to be performed by Operator/Crew Maintenance to keep your equipment in good operating condition and ready for its primary mission.

3-2. EXPLANATION OF TABLE ENTRIES.

a. **Item Number (Item No.) Column.** Numbers in this column are for reference. When completing NAVMC 1018 (Inspection Repair Tag), include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must perform checks and services for the interval listed.

b. **Interval Column.** This column tells you when you must perform the procedure in the procedure column.

(1) *Before* procedures must be done before you operate or use the equipment for its intended mission.

(2) *During* procedures must be done during the time you are operating or using the equipment for its intended mission.

(3) *After* procedures must be done immediately after you have operated or used the equipment.

c. **Location, Item To Check/Service Column.** This column identifies the location and the item to be checked or serviced. The item location is underlined.

3-2. EXPLANATION OF TABLE ENTRIES (Con't).

NOTE

The WARNINGs and CAUTIONs appearing in your PMCS table should always be observed. WARNINGs and CAUTIONs appear before applicable procedures. These WARNINGs and CAUTIONs must be observed to prevent serious injury or death to yourself and others or to prevent your equipment from being damaged.

d. **Procedure Column.** This column gives the procedure you must perform to check or service the item listed in the Item To Check/Service column to know if the equipment is ready or available for its intended mission or for operation. You must perform the procedure at the time stated in the interval column.

e. **Not Fully Mission Capable If: Column.** Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission. If you make check and service procedures that show faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failure.

3-3. GENERAL PMCS PROCEDURES.

a. Always perform PMCS in the same order so it gets to be a habit. Once you've had some practice, you'll spot anything wrong in a hurry. If the PGS does not perform as required, refer to the appropriate troubleshooting task in Section II of this chapter.

b. If anything looks wrong and you can fix it, write it on your NAVMC 1018. If you find something wrong that will make you Not Fully Mission Capable, IMMEDIATELY report it to trained PGS troubleshooter or Training Audio Visual Support Center (TAVSC).

c. Before performing preventive maintenance, read all the checks required for the applicable interval and prepare all tools needed to make all checks. Have several clean rags (Item 4, Appendix D) handy. Perform ALL inspections at the applicable interval.

CAUTION

High pressure water may damage electrical components. DO NOT use high pressure water to clean PGS components. DO NOT wash surface of vehicle when PGS is installed.

(1) **Keep It Clean.** Dirt and debris get in the way and may cover up a serious problem. Clean as you work and as needed. Use a clean rag (Item 4, Appendix D) and water when cleaning components and cables. Ensure that decals and identification bands are clean and legible.

(2) **Rust and Corrosion.** Check metal parts for rust and corrosion. If any bare metal or corrosion exists, clean and apply a coat of CLP (Item 1, Appendix D). Report it to your supervisor.

(3) **Cables and Connectors.** Look for cracked or broken insulation, bare wires, bent pins, and loose or broken connectors. Tighten loose connectors and ensure that the wires are in good condition.

(4) **Keep Brackets Lubricated.** If moving parts of brackets are not lubricated, components could break or wear prematurely. Apply a coat of CLP (Item 1, Appendix D) as required.

(5) **Decals.** Check decals for damage and legibility.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS).

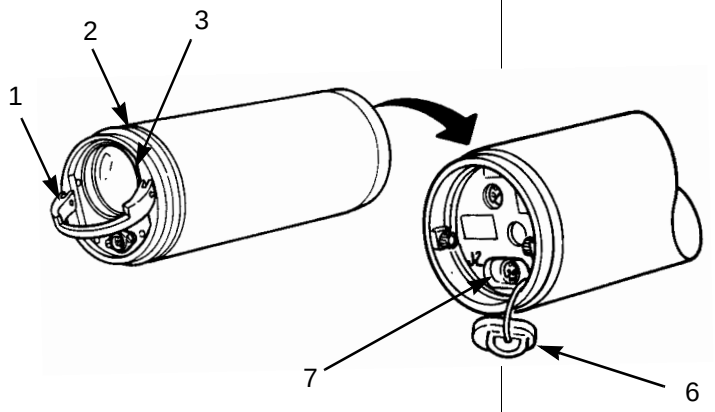
Item No.	Interval	Location: Item To Check/ Service	Procedure	Not Fully Mission Capable If:
1	**Before**	**Storage Cases**	Check hinges, latches, and housing for damage. Check foam interior for excessive dirt. Clean if necessary. Check foam interior for water damage or moisture. Allow to air dry if necessary. Check for presence of illustrated components list. **CAUTION** **Ensure that transceiver unit is properly LOCKED into mounting bracket by checking that locking handle is in raised position. Failure to perform this check may result in transceiver unit falling out of mounting bracket and becoming damaged.**	
2	**Before**	**Transceiver Unit**	a. Check for scratched or broken lens (3). If lens is dirty, gently wipe with lens paper (Item 3, Appendix D) moistened with lens cleaning compound (Item 2, Appendix D). b. Check expansion ring (2) for damage. c. Check cable connector (7) and dust cap (6) for damage. d. Check locking handle (1) for missing or damaged parts. Apply CLP (Item 1, Appendix D) to hinges of locking handle, as required.  	a. Lens is missing, scratched, or broken. b. Expansion ring is damaged. c. Cable connector is damaged. d. Locking handle is damaged or has missing parts.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

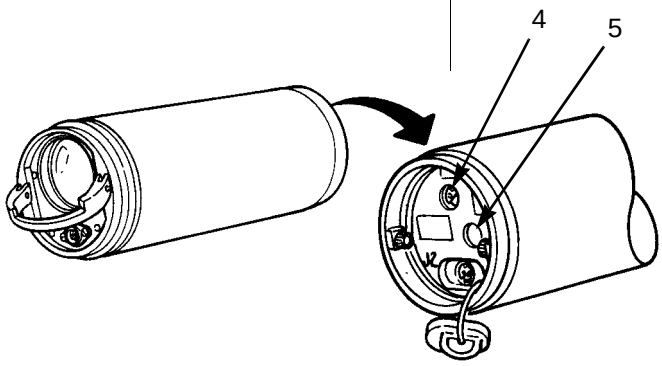
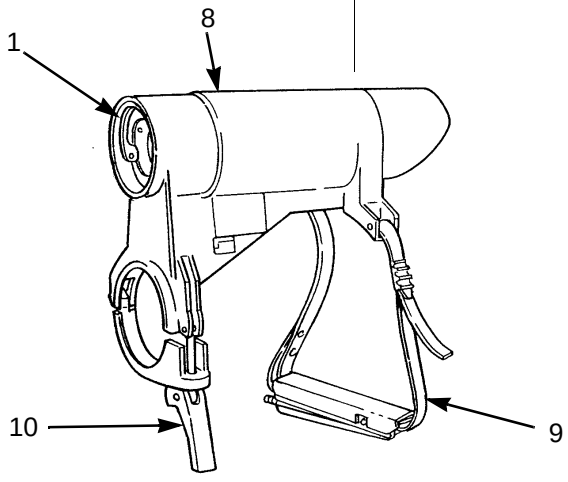
Item No.	Interval	Location / Item To Check/ Service	Procedure	Not Fully Mission Capable If:
2 (Con't)	**Before**	**Trans-ceiver Unit**	e. Check color of moisture indicator (4). Color should be pale blue or white	e. Moisture indicator color is pale pink.
				
			NOTE **Shock sensor is checked by gently shaking transceiver unit. Rattle will be heard if shock sensor is tripped.**	
			f. Check for tripped shock sensor (5) by gently shaking transceiver unit.	f. Shock sensor has been tripped.
			g. Check mounting bracket (8) for damage to locking handle (10) and strap (9).	g. Mounting bracket is damaged.
			h. Ensure that locking handle (1) is in raised position inside mounting bracket (8).	
				

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

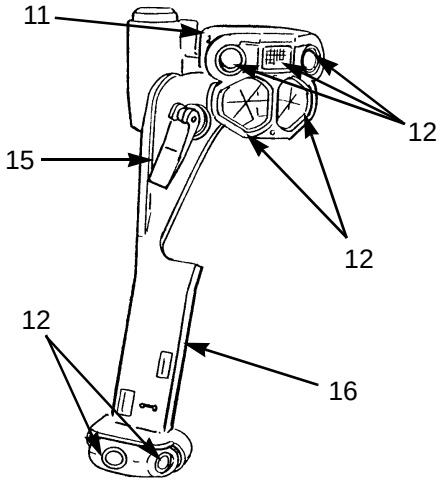
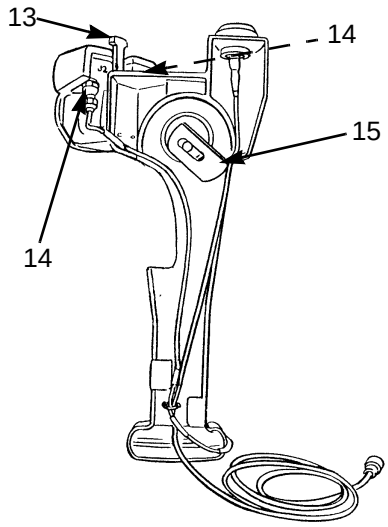
Item No.	Interval	Location: Item To Check/ Service	Procedure	Not Fully Mission Capable If:
3	Before	Front Retro Detector/ Hull Defilade Detector Assemblies	**NOTE** **Left and right retro detector unit/hull defilade detector unit (RDU/HDDU) assemblies are similar. Right RDU/ HDDU assembly is illustrated.**	
			a. Check for broken lenses (12) and damaged housing (11). If lenses are dirty, wipe with rag (Item 4, Appendix D) moistened with water.	a. Lenses are broken or housing is damaged.
				
			b. Check cable connectors (14) for damage.	b. Cable connectors are damaged.
			c. Check retaining straps (13) for damage.	c. Retaining strap is damaged.
			d. Check mounting bracket (16) and locking handle (15) for damage or missing parts. Apply CLP (Item 1, Appendix D) to wear surfaces of mounting bracket and hinges of locking handle, as required.	d. Mounting bracket or locking handle is damaged or has missing parts.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

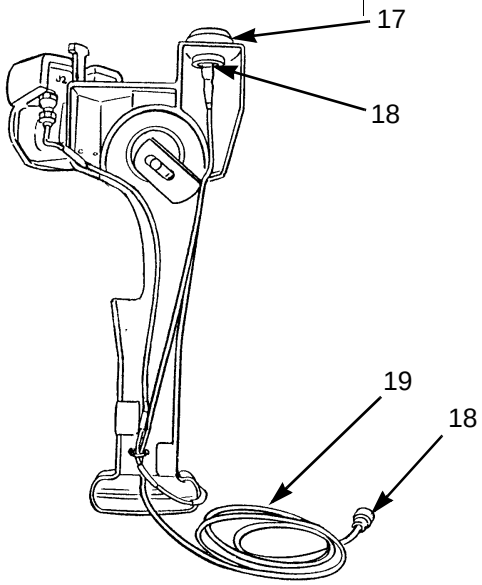
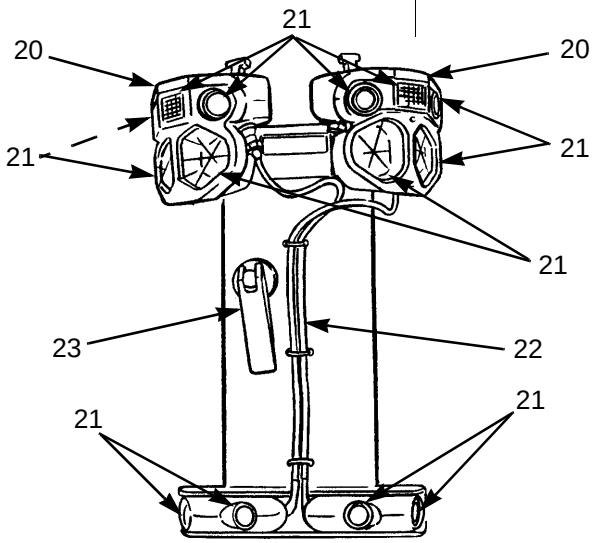
Item No.	Interval	Location: Item To Check/ Service	Procedure	Not Fully Mission Capable If:
4	**Before**	**RSI Antenna Assembly**	a. Check cable (19) and connectors (18) for damage. b. Check antenna (17) for secure mounting and damage. 	a. Cable or connectors are damaged. b. Loose mounting or damage.
5	**Before**	**Rear Retro Detector/ Hull Defilade Detector Assembly**	a. Check for broken lenses (21) and damaged housing (20). If lenses are dirty, wipe with rag (Item 4, Appendix D) moistened with water. 	a. Lenses are broken or housing is damaged.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

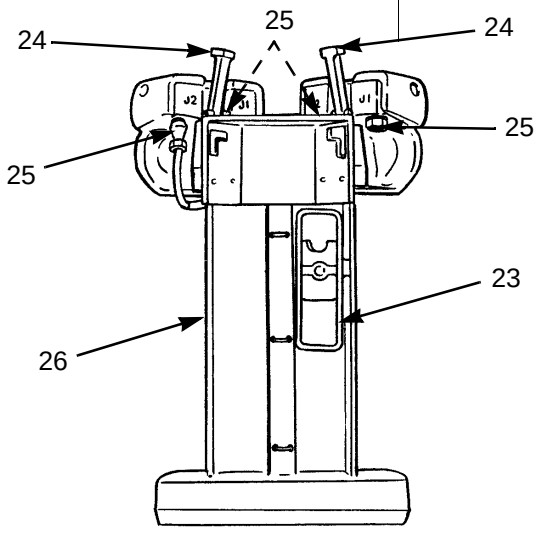
Item No.	Interval	Location / Item To Check/ Service	Procedure	Not Fully Mission Capable If:
5 (Con't)	**Before**	**Rear Retro Detector/ Hull Defilade Detector Assembly**	b. Check mounting bracket (26) and locking handle (23) for damage and missing parts. Apply CLP (Item 1, Appendix D) to wear surfaces of mounting bracket and hinges of locking handle, as required.	b. Mounting bracket or locking handle is damaged or has missing parts.
			c. Check cables (22) and connectors (25) for damage.	c. Cables or connectors are damaged.
			d. Check retaining straps (24) for damage.	d. Retaining straps are damaged.
				

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

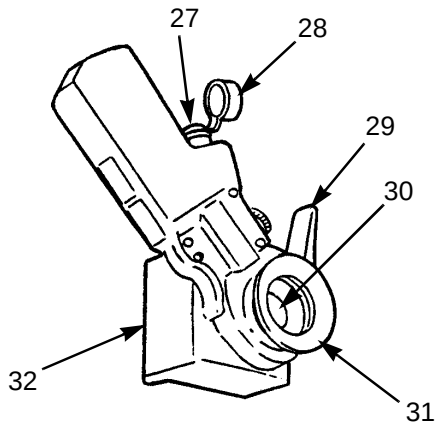
Item No.	Interval	Location Item To Check/ Service	Procedure	Not Fully Mission Capable If:
6	**Before**	**Tracer, Burst, Obscuration Simulator (TBOS) Eyepiece Units w/ Brackets**	**NOTE** **Commander's and gunner's TBOS eyepiece units are similar. One is illustrated.** a. Check for scratched or broken lens (30). If lens is dirty, gently wipe with lens paper (Item 3, Appendix D) moistened with lens cleaning compound (Item 3, Appendix D). b. Check cable connector (27) for damage. c. Check locking handle (29) for damage or missing parts. d. Check protective cap (28) for presence and damage. e. Check rubber eyepiece (31) for damage. Ensure rubber is not torn or cracked. f. Check bracket (32) expand function by moving locking handle up and down.  	a. Lens is missing, scratched, or broken. b. Cable connector is damaged. c. Locking handle is damaged or parts are missing. e. Rubber eyepiece is torn or cracked. f. Expand function of bracket not working.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

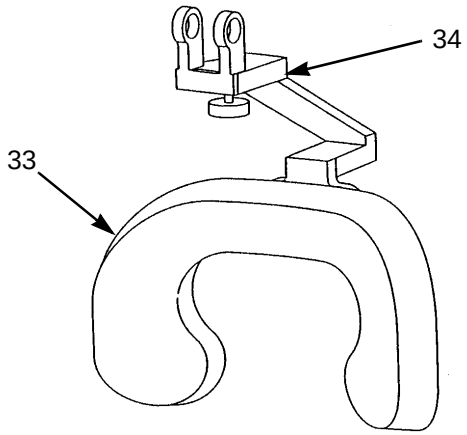
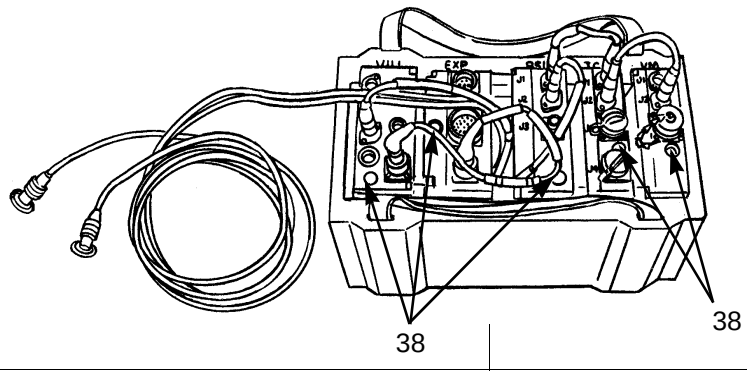
Item No.	Interval	Location Item To Check/ Service	Procedure	Not Fully Mission Capable If:
7	**Before**	**Browpad, Commander**	**WARNING** **Do not use browpad if foam is damaged. Failure to follow this warning may result in injury or blindness to personnel.** Check browpad for damaged foam (33) or hardware (34).  	Browpad is missing or damaged.
8	**Before**	**Vehicle Interface Assembly**	**NOTE** **Vehicle interface assembly consists of an interface box, expansion unit, TBOS driver unit, vehicle interface unit, TBOS video mixer, RSI unit, target computer unit, and cables.** a. Check color of five moisture indicators (38). Color should be pale blue or white.  	a. One moisture indicator color is pale pink.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

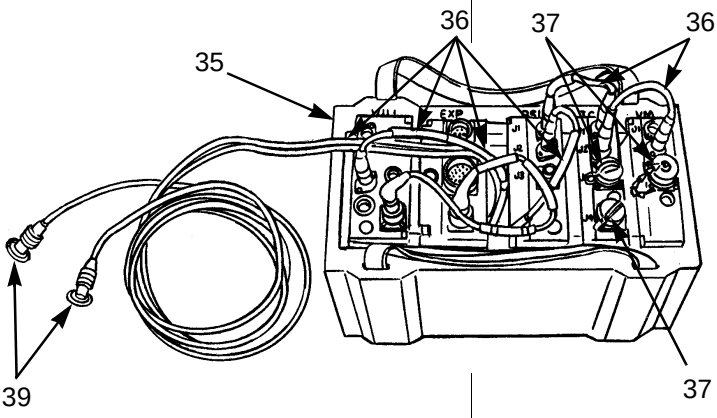
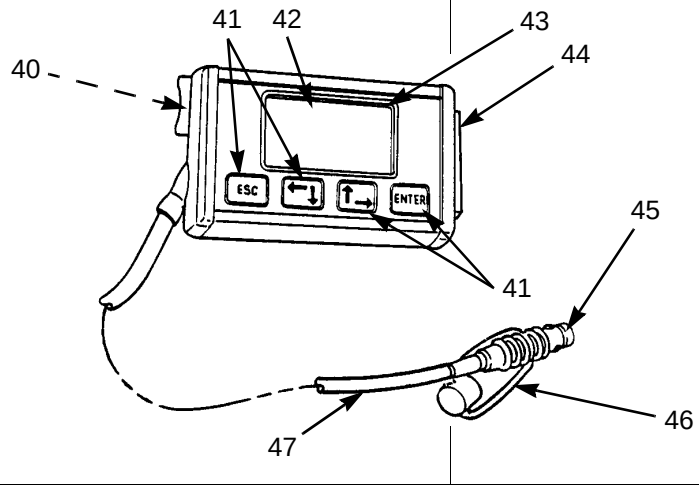
Item No.	Interval	Location: Item To Check/ Service	Procedure	Not Fully Mission Capable If:
8 (Con't)	**Before**	**Vehicle Interface Assembly**	b. Check cables (36) and cable connectors (39) for damage. c. Check dust caps (37) for damage. d. Check interface box (35) for damage. 	b. Cables or cable connectors are damaged.
9	**Before**	**Control Panel/TDRS Memory Card**	a. Check control panel pushbuttons (41) and display screen (42) for damage. b. Check cable (47), cable connector (45), and dustcap (46) for damage. c. Check color of moisture indicator (43). Color should be pale blue or white. d. Check TDRS memory card dust cover (44) for damage. e. Check that TDRS memory card eject button (40) moves freely. 	a. Pushbuttons or display screen is damaged. b. Cable or cable connector is damaged. c. Moisture indicator color is pale pink.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

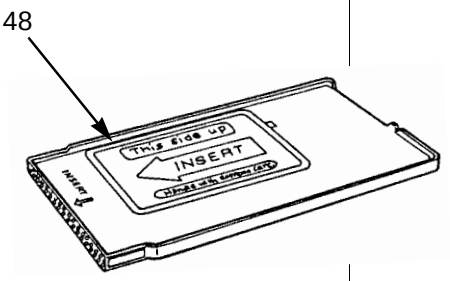
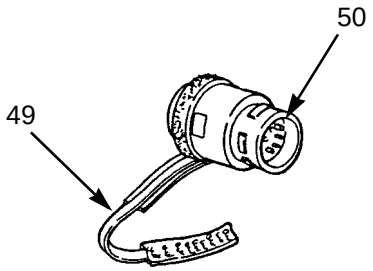
Item No.	Interval	Location / Item To Check/ Service	Procedure	Not Fully Mission Capable If:
9 (Con't)	**Before**	**Control Panel/TDRS Memroy Card**	f. Check TDRS memory card (48) for damage. 	f. TDRS memory card is damaged or missing.
10	**Before**	**Shorting Plug**	a. Check connector (50) for bent, missing, or damaged pins. b. Check for missing or torn retaining strap (49). 	a. Bent, missing, or damaged pins.
11	**Before**	**System Cables**	Check all cables and cable connectors for damage.	Cables or cable connectors are damaged.
12	**During**	**PGS**	a. Check all components for secure mounting. Ensure that all cable connections are tight. b. Check lenses, reflectors, and detectors as necessary. Use lens paper (Item 3, Appendix D) moistened with lens cleaning compound (Item 2, Appendix D) on transceiver unit and TBOS gunner's and commander's eyepiece unit lenses. Use a rag (Item 4, Appendix D) moistened with water on all other components.	

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

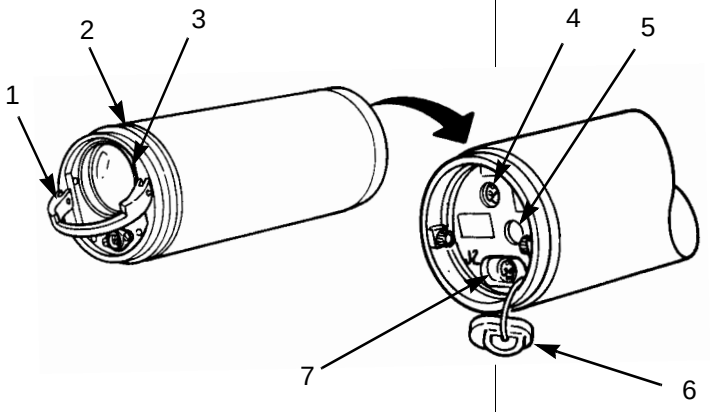
Item No.	Interval	Location Item To Check/ Service	Procedure	Not Fully Mission Capable If:
13	**After**	**Storage Cases**	Check hinges, latches, and housing for damage. Check foam interior for excessive dirt. Clean if necessary. Check foam interior for water damage or moisture. Allow to air dry if necessary. Check for presence of illustrated components list.	
14	**After**	**Transceiver Unit**	**CAUTION** **Ensure that transceiver unit is properly LOCKED into mounting bracket by checking that locking handle is in raised position. Failure to perform this check may result in transceiver unit falling out of mounting bracket and becoming damaged.**	
			a. Check for scratched or broken lens (3). If lens is dirty, gently wipe with lens paper (Item 3, Appendix D) moistened with lens cleaning compound (Item 2, Appendix D).	a. Lens is missing, scratched, or broken.
			b. Check expansion ring (2) for damage.	b. Expansion ring is damaged.
			c. Check cable connector (7) and dust cap (6) for damage.	c. Cable connector is damaged.
				
			d. Check locking handle (1) for missing or damaged parts. Apply CLP (Item 1, Appendix D) to hinges of locking handle, as required.	d. Locking handle is damaged or has missing parts.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

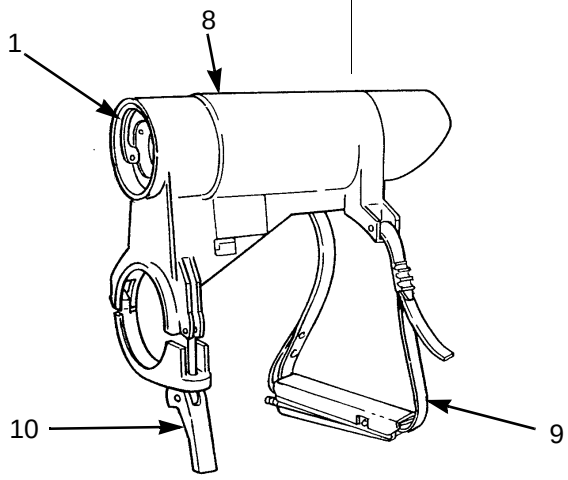
Item No.	Interval	Location: Item To Check/ Service	Procedure	Not Fully Mission Capable If:
14 (Con't)	**After**	**Trans-ceiver Unit**	e. Check color of moisture indicator (4). Color should be pale blue or white. **NOTE** **Shock sensor is checked by gently shaking transceiver unit. Rattle will be heard if shock sensor is tripped.** f. Remove transceiver unit from bracket and check for tripped shock sensor (5) by gently shaking. g. Check mounting bracket (8) for damage to locking handle (10) and strap (9). h. Ensure that locking handle (1) of transceiver unit is in raised position inside mounting bracket (8).  	f. Shock sensor has been tripped. g. Mounting bracket is damaged.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

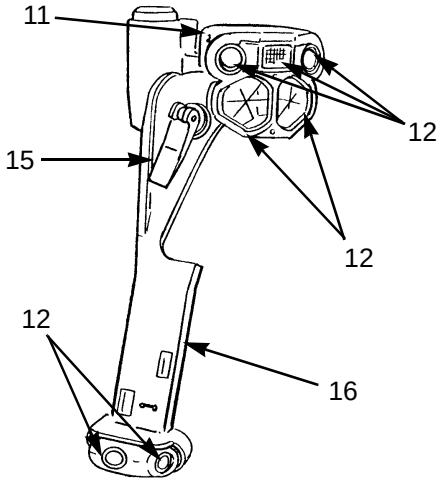
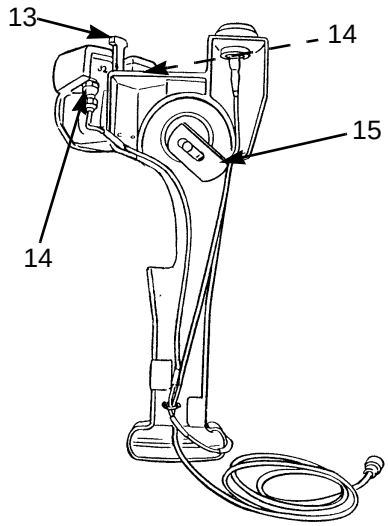
Item No.	Interval	Location / Item To Check/ Service	Procedure	Not Fully Mission Capable If:
15	**After**	**Front Retro Detector/ Hull Defilade Detector Assemblies**	**NOTE** **Left and right RDU/HDDU assemblies are similar. Right RDU/HDDU assembly is illustrated.** a. Check for broken lenses (12) and damaged housing (11). If lenses are dirty, wipe with rag (Item 4, Appendix D) moistened with water. b. Check cable connectors (14) for damage. c. Check retaining straps (13) for damage. d. Check mounting bracket (16) and locking handle (15) for damage or missing parts. Apply CLP (Item 1, Appendix D) to wear surfaces of mounting bracket and hinges of locking handle, as required.  	a. Lenses are broken or housing is damaged. b. Cable connectors are damaged. c. Retaining strap is damaged. d. Mounting bracket or locking handle is damaged or has missing parts.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

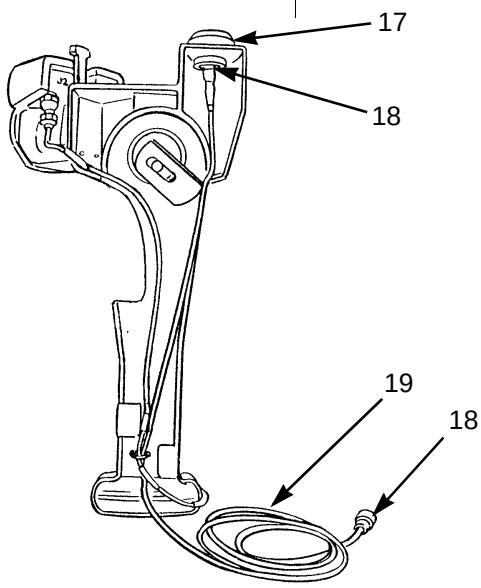
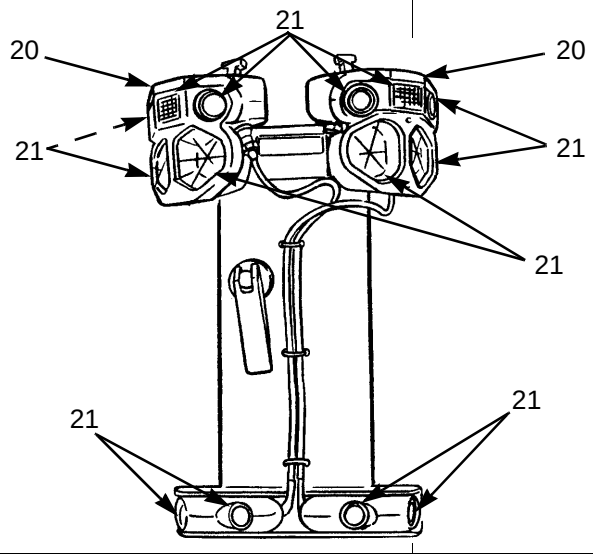
Item No.	Interval	Location / Item To Check/ Service	Procedure	Not Fully Mission Capable If:
16	**After**	**RSI Antenna Assembly**	a. Check cable (19) and connectors (18) for damage. b. Check for antenna (17) for secure mounting and damage. 	a. Cable connectors are damaged. b. Loose mounting or damage.
17	**After**	**Rear Retro Detector/ Hull Defilade Detector Assembly**	a. Check for broken lenses (21) and damaged housing (20). If lenses are dirty, wipe with rag (Item 4, Appendix D) moistened with water. 	a. Lenses are broken or housing is damaged.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

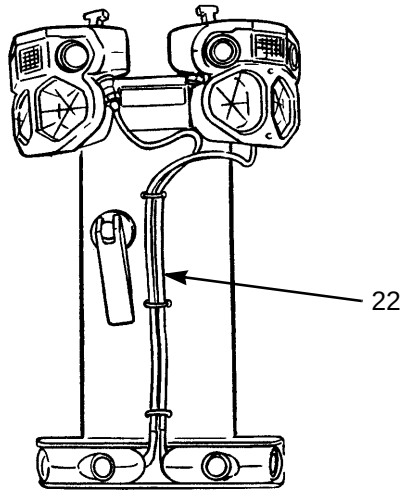
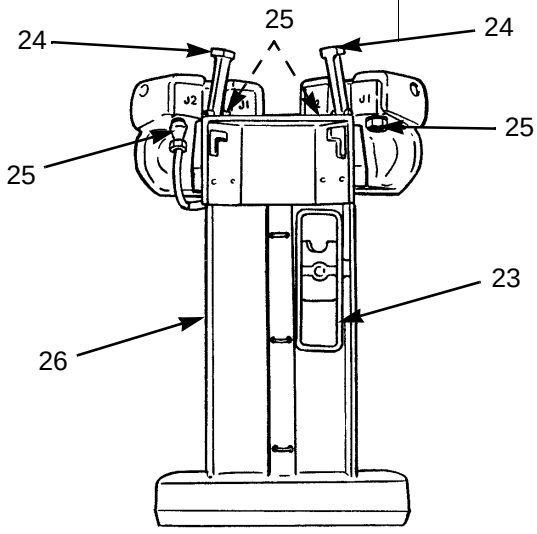
Item No.	Interval	Location / Item To Check/ Service	Procedure	Not Fully Mission Capable If:
17 (Con't)	**After**	**Rear Retro Detector/ Hull Defilade Detector Assembly**	b. Check cables (22) and connectors (25) for damage.	b. Cable or cable connector is damaged.
				
			c. Check retaining straps (24) for damage.	c. Retaining strap is damaged.
			d. Check mounting bracket (26) and locking handle (23) for damage and missing parts. Apply CLP (Item 1, Appendix D) to wear surfaces of mounting bracket and hinges of locking handle, as required.	d. Mounting bracket or locking handle is damaged.
				

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

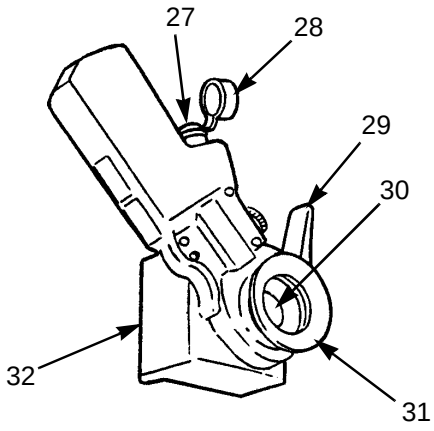
Item No.	Interval	Location / Item To Check/ Service	Procedure	Not Fully Mission Capable If:
18	**After**	**TBOS Eyepiece Units w/ Brackets**	a. Check for scratched or broken lens (30). If lens is dirty, gently wipe with lens paper (Item 3, Appendix D) moistened with lens cleaning compound (Item 2, Appendix D).	a. Lens is missing, scratched, or broken.
			b. Check cable connector (27) for damage.	b. Cable connector is damaged
			c. Check locking handle (29) for damage or missing parts.	c. Locking handle is damaged or parts are missing.
			d. Check protective cap (28) for presence and damage.	
			e. Check rubber eyepiece (31) for damage. Ensure rubber is not torn or cracked.	e. Rubber eyepiece is torn or cracked.
			f. Check bracket (32) expand function by moving locking handle up and down.	f. Expand function of bracket not working.
				

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

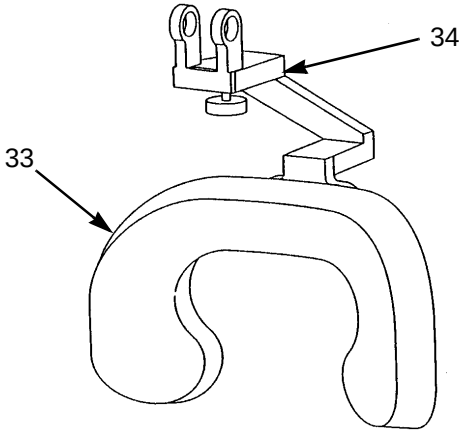
Item No.	Interval	Location / Item To Check/ Service	Procedure	Not Fully Mission Capable If:
19	After	Browpad, Commander	**WARNING** **Do not use browpad if foam is damaged. Failure to follow this warning may result in injury or blindness.** Check browpad for damaged foam (33) or hardware (34).  	Browpad is missing or damaged.
20	After	Vehicle Interface Assembly	**NOTE** **Vehicle interface assembly consists of an interface box, expansion unit, TBOS driver unit, vehicle interface unit, TBOS video mixer, RSI unit, target computer unit, and cables.** a. Check color of five moisture indicators (38). Color should be pale blue or white. b. Check cables (36) and cable connectors (39) for damage. c. Check dust caps (37) for damage. d. Check interface box (35) for damage. e. Ensure that cables are securely connected.	a. One moisture indicator color is pale pink. b. Cables or cable connectors are damaged.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

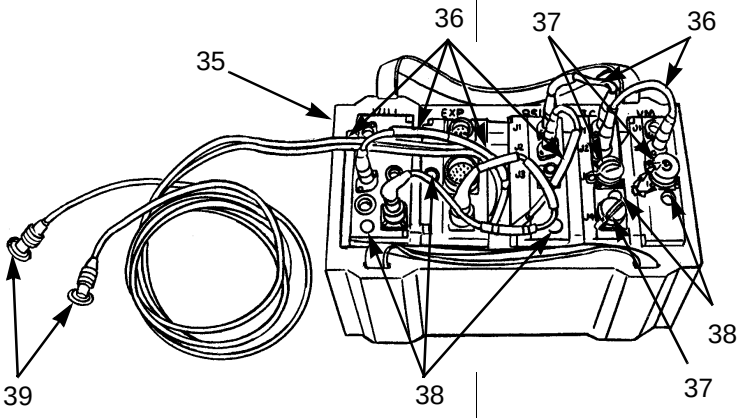
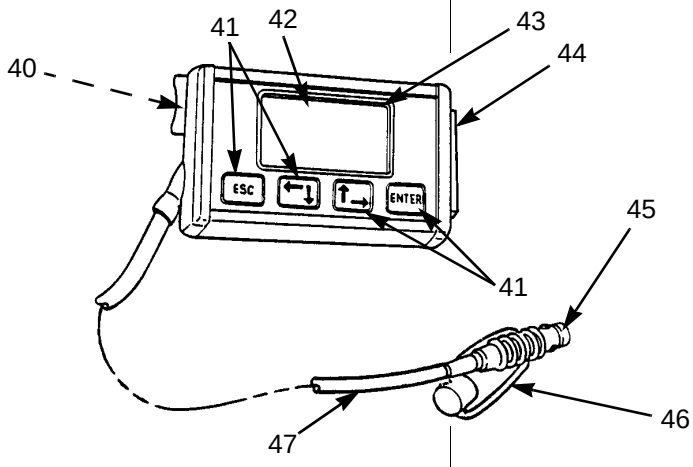
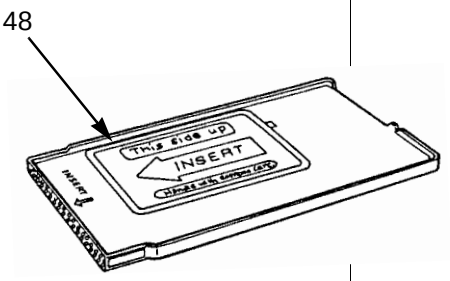
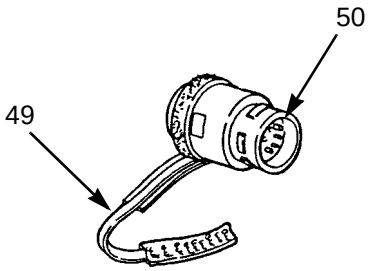
Item No.	Interval	Location / Item To Check/ Service	Procedure	Not Fully Mission Capable If:
20 (Con't)	**After**	**Vehicle Interface Assembly**		
21	**After**	**Control Panel/ TDRS Memory Card**	a. Check control panel pushbuttons (41) and display screen (42) for damage. b. Check cable (47), cable connector (45), and dustcap (46) for damage. c. Check color of moisture indicator (43). Color should be pale blue or white. d. Check TDRS memory card dust cover (44) for damage. e. Check that TDRS memory card eject button (40) moves freely. 	a. Pushbuttons or display screen is damaged. b. Cable or cable connector is damaged. c. Moisture indicator color is pale pink**.**

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (PMCS) (Con't).

Item No.	Interval	Location / Item To Check/ Service	Procedure	Not Fully Mission Capable If:
21 (Con't)		**Control Panel/ TDRS Memory Card**	f. Check TDRS memory card (48) for damage. 	f. TDRS memory card is damaged.
22	**After**	**Shorting Plug**	a. Check connector (50) for bent, missing, or damaged pins. b. Check for missing or torn retaining strap (49). 	
23	**After**	**System Cables**	Check all cables and connectors for damage.	Any cable or connector is damaged.
24	**After**	**PGS**	Ensure that all components are clean and connector dust caps are installed before returning to storage cases.	